CLAIMS

1. A method for calibrating an electronic meter, comprising the steps of:

(a) applying to an input of the electronic meter a test waveform having a known phase shift between voltage and current;

(b) measuring a phase shift between the voltage and the current of the test waveform using the electronic meter;

(c) determining a phase shift error based on the difference between the known phase shift and the measured phase shift;

(d) determining digital filter coefficients to produce a digital filter delay that corresponds to the phase shift error; and

(e) saving digital filter coefficients to compensate for the phase shift error during normal metering operation.

2. A method as defined in claim 1 wherein step (a) comprises applying waveforms of a polyphase power line to the input of the electronic meter and wherein steps (b), (c), (d) and (e) are repeated for each phase of the polyphase power line.

3. A method as defined in claim 1 wherein steps (a), (b), (c), (d) and (e) are repeated for predetermined current ranges to provide a set of digital filter coefficients for each of the predetermined current ranges.

4. A method as defined in claim 1 wherein the step of determining digital filter coefficients is performed in a computing device external to the electronic meter and wherein the digital filter coefficients are downloaded from the external computing device to the electronic meter.

5. A method as defined in claim 4 wherein the electronic meter includes a digital signal processor and wherein the digital filter coefficients are downloaded to the digital signal processor.

6. A method as defined in claim 4 wherein step (b) comprises measuring the power factor of the test waveform with the electronic meter, sending the measured power factor to the external computing device and determining the measured phase shift from the measured power factor in the external computing device.

7. A method as defined in claim 1 wherein step (a) comprises applying a test waveform to an input of an electronic watthour meter.

8. An electronic meter comprising:

a sensing circuit for sensing voltage and current values of a waveform;

an analog-to-digital converter for converting the sensed voltage and current values to digital voltage and current values;

a digital filter for delaying one or both of the digital voltage and current values to compensate for a phase shift error in the sensing circuit; and

a computation circuit for computing at least one parameter of the waveform in response to the phase compensated voltage and current values.

9. An electronic meter as defined in claim 8 wherein said digital filter and said computation circuit are implemented in a digital signal processor.

10. An electronic meter as defined in claim 8 wherein said sensing circuit comprises circuitry for sensing phase voltage and line current values of each phase of a polyphase power line and wherein said electronic meter includes a digital filter for delaying the digital voltage values of each phase to compensate for the phase shift error associated with each phase of the polyphase power line.

11. An electronic meter as defined in claim 8 said electronic meter further comprises means responsive to the current value of the waveform for selecting a set of digital filter coefficients that corresponds to the current value and for applying the selected set of digital filter coefficients to the digital filter.

12. An electronic meter as defined in claim 8 wherein said digital filter comprises a fractional delay digital filter for delaying the digital voltage values in increments that are a fraction of the sampling interval of said analog-to-digital converter.

13. An electronic meter as defined in claim 12 further comprising a delay digital filter for delaying the digital current values.

14. An electronic meter as defined in claim 8 configured as an electronic watthour meter.

15. A method for operating an electronic meter, comprising the steps of:

(a) sensing voltage and current values of a waveform in a sensing circuit;

(b) converting the sensed voltage and current values to digital voltage and current values at a sampling rate;

(c) delaying one or both of the digital voltage and current values in a digital filter to compensate for a phase shift error in the sensing circuit; and

(d) computing at least one parameter of the waveform in response to the phase compensated voltage and current values.

16. A method as defined in claim 15 wherein steps (c) and (d) are performed in a digital signal processor.

17. A method as defined in claim 15 wherein step (a) comprises sensing voltage and current values of each phase of a polyphase power line and wherein step (c) comprises delaying the digital voltage values of each phase to compensate for the phase shift error associated with each phase of the polyphase power line.

18. A method as defined in claim 15 further comprising the step of selecting, in response to the current value of the waveform, a set of digital filter coefficients that corresponds to the current value and applying the selected set of digital filter coefficients to the digital filter.

19. A method as defined in claim 15 wherein step (c) comprises delaying the digital voltage values in increments that are a fraction of the sampling interval.

20. A method as defined in claim 19 wherein step (c) further comprises delaying the digital current values.